

Work Order ID 153774

Friday, November 25, 2016 7:42:52 AM

153774

Page 1

Item ID: 647.7711

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Strut Tube

Start Date: 11/30/2016 Start Qty: 8.00

Q

Cust Item ID:

Required Date: 12/7/2016 Req'd Qty: 8.00

Q

Customer:

Reference:

Approvals:

Process Plan:

DAS
21
9-89

Date: NOV 29 2016

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
647.7700	A2								
110		0.00							DAS 32 9-89
110									
Mill Conv	Memo	0.00							
Conventional Milling Machine	1- CUT AS PER DWG 2- Mill end of tube as per dwg 3- DEBURR AS PER DWG								16-12-05
120	QC6- Inspect dimensions to drawing	0.00							DAS 38 9-89
120									
QC	Memo	0.00							DEC 05 2016
Quality Control									
130	Identify as per dwg & Stock Location W1002	0.00							DAS 6 9-89
130									
Packaging	Memo	0.00							DEC 05 2016
Packaging	***IDENTIFY AS PER APICAL MPP-120 BY STAMPING P# AND REV***								

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐																																																													
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval																																																									
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval																																																									
Root Cause		FAULT CATEGORY																																																															
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐	Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐	Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐	Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐	Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐	Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐	Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐	Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐	LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐	Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐	Past Expiry Date ☐	Manufacturing Process ☐	OTHER :			
Misidentified ☐	Past Due ☐																																																																

Work Order ID 153774***153774***

Page 2

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g

Customer:

Reference:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run Start ***NR1***

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

140

QC21- Final Inspection - Work Order Release

0.00

140

QC

Memo

0.00

Quality Control

16/12/6 HJ
MK
16-12-06

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : _____					

Picklist Print

Friday, November 25, 2016 7:42:52 AM

Page 1

Work Order ID: 153774

153774

Parent Item: 647.7711

647 7711

Parent Item Name: Strut Tube

Start Date: 11/30/2016

Required Date: 12/7/2016

Start Qty: 8.00

Required Qty: 8.00

Comments: IPP REV:A 12.11.06 NEW ISSUE DD VERF:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
M4130NT0.500W.083		Purchased	No			110	f	7.8330	1.816	15.29263			DAS 32 9-89
M4130NT0 500W 083									**			16-12-05	

4130 RD tube .500 x .083W

Location

Loc Qty

Loc Code

MAT032

7.833

M135325

7.833

136 243

15.04'

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval 		
Description Work Order Deviation				Disposition					
								Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	

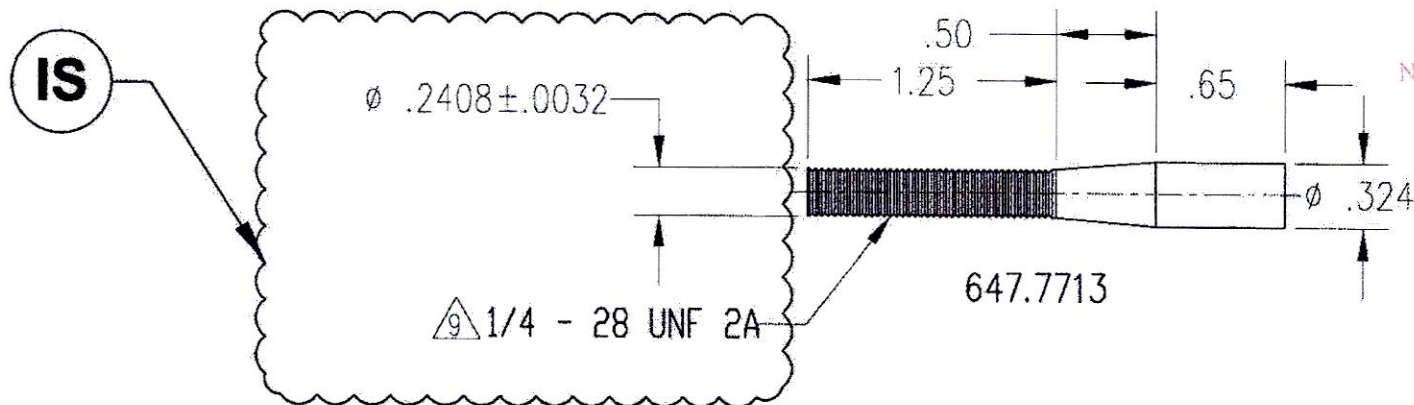
Root Cause			FAULT CATEGORY							
Environment ☐	☐	No Re-verification	☐	Pressure/Forced	☐	Temperature/Cure	☐	Power Loss/Surge	☐	Positioned Wrong
Design ☐	☐	Operator	☐	Bending	☐	Set-up	☐	Folio/Program	☐	Outside Dimensions
Doc/Data ☐	☐	Offset/Setup	☐	Centre Not Concentric	☐	BOM/Route	☐	Grain	☐	Over/Under tolerance
Equip/Tooling ☐	☐	Supplier	☐	Cracks	☐	Broken/Damage/Defect	☐	Weld	☐	Part Incorrect
Handling/Pre ☐	☐	Training	☐	Crimp/Kink/Ripple/Wave	☐	Inspection Incomplete/Unqualified	☐	Wrong Stock Pulled	☐	Part Lost/Missing
Material ☐	☐	Use for Testing	☐	Cuffs	☐	Contamination	☐	Out of Sequence	☐	Part Moved
Internal Transport ☐	☐	Poor Information	☐	Crushing	☐	Countersink	☐	Off-set	☐	Drawing
Tribal Knowledge ☐	☐	Rushing	☐	Heat Treat	☐	Cut Too Short	☐	Mislabeled	☐	Finish
LOA ☐	☐	Product Improvement	☐	Wave/Twist in Tube	☐	Instructions Incomplete/Unclear	☐	Fit/Function	☐	Misread
Substation ☐	☐	Process Improvement	☐	Marks/Chatter	☐	Drill Holes	☐	Misaligned/off center	☐	Turning Sequence
Past Expiry Date ☐	☐	Manufacturing Process	OTHER :							
Misidentified ☐	☐	Past Due								



APICAL INDUSTRIES, INC.
dba DART AEROSPACE

ENGINEERING CHANGE NOTICE NO. 05397		SHEET 1 OF 1	
DWG NO. 647.7700	REV: A	PREPARED BY T. CROSS	DATE: 05/02/16
DWG TITLE: STRUT ASSY			
APPROVED BY: ENGR <i>[Signature]</i>	MFG <i>[Signature]</i>	QC <i>[Signature]</i>	EFF: <i>[Signature]</i>
REASON: REVISED DIMENSION			EFFECT ON DWG ☐ INC. ☒ UNINC.
TRANSACTION CODES (TC): A-ADD C-CREATE R-REVISE D-DELETE			ECR: 16-028
			ACTION LIST: 1.

SHEET 2, ZONE D4 IS:



SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 153774 MLJ
1671-25

DOCUMENTS EFFECTED:	☐ PATTERN	☐ MDL	☐ INSTALL INSTRU	☐ ICA	☐ BOM	CHANGE CATEGORY ☐ MAJOR ☒ MINOR	DER REVIEW REQUIRED ☐ YES ☒ NO
---------------------	----------------------------------	------------------------------	---	------------------------------	------------------------------	---	--



APICAL INDUSTRIES, INC.
dba DART AEROSPACE

ENGINEERING CHANGE NOTICE NO.

05110

SHEET 1 OF 1

DWG NO. 647.7700

REV: A

PREPARED
BY

A. QUAN

DATE: 08/21/15

EFFECT ON DWG

☐ INC. ☒ UNINC.

DWG TITLE: STRUT ASSY

APPROVED BY:

ENGR

MFG

QC

EFF.

CURRENT ORDER

TRANSACTION CODES (TC):
A-ADD
R-REVISE
C-CREATE
D-DELETE

REASON: REVISED FINISH CALLOUT AS PER ECR 15-209

SHEET 1, NOTES IS:

ACTION: UPDATE MO & WO

NOTES:

- 1 MATERIAL: 4130 STEEL PER AMS-T-6736, .50" OD, .083" WALL THK.
- 2 MATERIAL: 4130 STEEL PER AMS-T-6736, .375" OD, .075" WALL THK.
- 3 MATERIAL: 4130 STEEL PER AMS-T-6736, .324" OD.
- 4 FINISH: PRIME IAW MIL-P-2337J TYPE I CLASS N; 1-2 MIL MAX
5. DEBURR AND BREAK ALL SHARP EDGES
6. IDENTIFY IAW MPP-120.
- 7 WELD IAW MIL-STD-2219. TIG WELD WITH FILLER ROD
- 8 FINISH: CAD PLATE IAW QQ-P-416F CLASS I TYPE II
- 9 MASK THREAD PRIOR TO FINISH

F/N	TC	PART NUMBER	QTY	DESCRIPTION	MATERIAL/SPECIFICATION
DOCUMENTS EFFECTED:					
☐ MDL ☐ INSTALL INSTRUCTIONS ☐ ICA ☐ FMS ☐ BOM					
CHANGE CATEGORY					
☐ MAJOR ☐ MINOR					
DER REVIEW REQUIRED					
☐ YES ☐ NO					

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NOTES:

1. MATERIAL: 4130 STEEL PER AMS-T-6736, .50" OD, .083" WALL THK.
2. MATERIAL: 4130 STEEL PER AMS-T-6736, .375" OD, .075" WALL THK.
3. MATERIAL: 4130 STEEL PER AMS-T-6736, .324" OD.
4. FINISH: PRIME IAW MIL-P-2337J TYPE I CLASS N; 1-2 MIL MAX
5. DEBURR AND BREAK ALL SHARP EDGES
6. IDENTIFY IAW MPP-120.
7. WELD IAW MIL-STD-2219, TIG WELD WITH FILLER ROD
8. FINISH: CAD PLATE IAW MIL-C-5541 CLASS 1A
9. MASK THREAD PRIOR TO FINISH

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
1	LAST PROTOTYPE REVISION R02	N/C	
N/C	INITIAL RELEASE	12/02/09	P. BRAVO
A	INCORPORATED ECN 04741	11/12/14	P. BRAVO

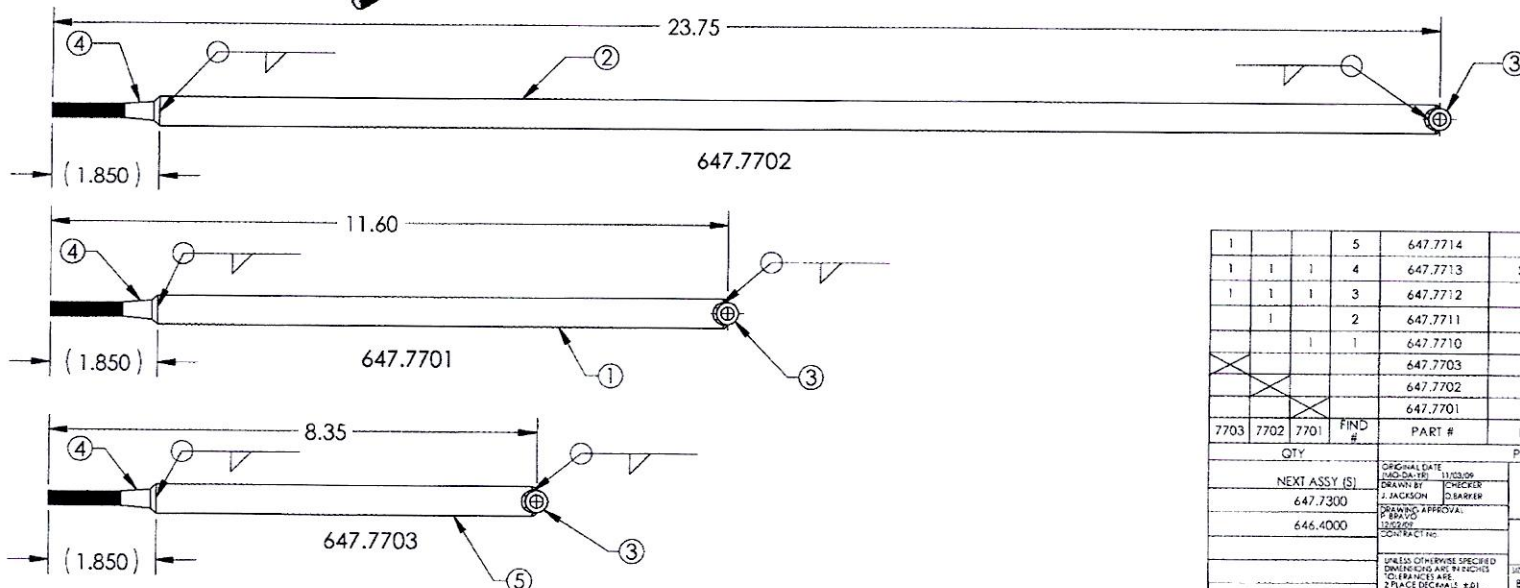
647.7701

647.7703

647.7702

UNINCORPORATED ECN(s)

05110, 05397



1			5	647.7714	STRUT TUBE	△	
1	1	1	4	647.7713	STRUT THREAD	△	△
1	1	1	3	647.7712	STRUT TUBE	△	
		1	2	647.7711	STRUT TUBE	△	
		1	1	647.7710	STRUT TUBE	△	
				647.7703	STRUT ASSY		△△
				647.7702	STRUT ASSY		△△
				647.7701	STRUT ASSY		△△
7703	7702	7701	FIND #	PART #	DESCRIPTION	MAT'L	SPEC.
QTY				PARTS LIST			
NEXT ASSY (S)				ORIGINAL DATE 11/03/09			
647.7300				DRAWN BY J. JACKSON			
646.4000				CHECKER D. BARBER			
				DRAWING APPROVAL: P. BRAVO			
				11/03/09			
				CONTRACT NO.			
				UNLESS OTHERWISE SPECIFIED			
				DIMENSIONS AND FINISHES			
				TOLERANCES ARE:			
				2 PLACE DECIMALS ±.01			
				3 PLACE DECIMALS ±.005			
				ANGLES ± .5°			
				SCALE NONE			
				SHEET 1 OF 2			

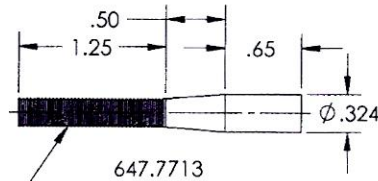
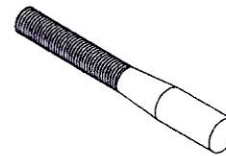
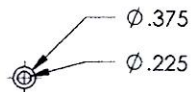
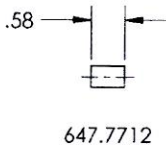
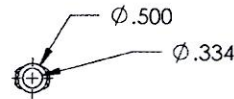
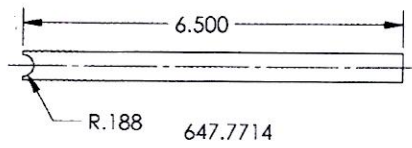
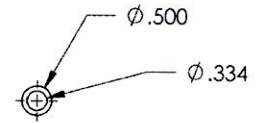
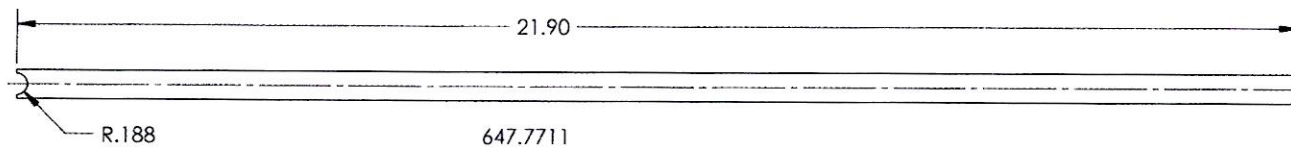
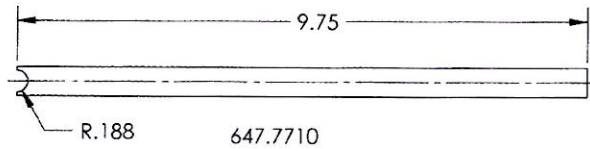
APICAL INDUSTRIES
2608 TEMPLE HEIGHTS DR.
OCEANSIDE, CA. 92056-3512 (760)724-5300

STRUT ASSY

DWG. NO. 647.7700

REV. A

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1/4 - 28 THREAD

ORIGINAL DATE 11/03/09	APICAL INDUSTRIES	
DRAWN BY J. JACKSON	2608 TEMPLE HEIGHTS DR.	
CHECKED BY D. BARNER	OCFANSIDE, CA. 92056-3512 (760)724-5300	
DRAWING APPROVAL P. BRAVO	STRUT ASSY	
CONTRACT NO.	SHEET 8	DWG. NO. 647.7700
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ±.01 3 PLACE DECIMALS ±.005 ANGLES ±.5°	SCALE: NONE	SHEET 2 OF 2